

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057002 A3

(51) International Patent Classification⁷: **C12N 15/82**,
A01H 11/00, C12P 21/02, C12N 9/10

(21) International Application Number:
PCT/EP2003/014576

(22) International Filing Date:
18 December 2003 (18.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02028536.7 20 December 2002 (20.12.2002) EP
03022453.9 7 October 2003 (07.10.2003) EP

(71) Applicant (for all designated States except US): **GREEN-
OVATION BIOTECH GMBH** [DE/DE]; Bötzing-
Strasse 29b, 79111 Freiburg (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RESKI, Ralf**
[DE/DE]; Am Osterbach 26, 79254 Oberried-Zastler (DE).
DECKER, Eva [DE/DE]; Schlehenrain 9, 79108 Freiburg
(DE). **KOPRIVOVA, Anna** [UA/DE]; Reutebachgasse
26b, 79108 Freiburg (DE). **GORR, Gilbert** [DE/DE]; Im
Mohnacker 26, 79112 Freiburg (DE). **STEMMER, Chris-
tian** [DE/DE]; Tennenbacher Stasse 13, 79106 Freiburg
(DE). **LIENHART, Otmar** [DE/DE]; Sundgauallee 43,
79114 Freiburg (DE).

(74) Agent: **STÜRKEN, Joachim**; Joachim Stürken Patentan-
walts-gesellschaft mbH, Engesserstrasse 4a, 79108 Freiburg
(DE).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report
— before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
26 August 2004

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: PRODUCTION OF HETEROLOGOUS GLYCOSYLATED PROTEINS IN BRYOPHYTE CELLS

(57) Abstract: Bryophyte plants and bryophyte plant cells comprising dysfunctional fucT and xylT genes and an introduced glycosyl transferase gene, methods for the production of glycosylated proteins therewith, vectors and uses thereof.

WO 2004/057002 A3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/14576

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/82 A01H11/00 C12P21/02 C12N9/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12P A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, EMBASE, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/29242 A (MONSANTO CO) 26 April 2001 (2001-04-26) abstract	26-28, 30, 32, 33
Y	page 8 -page 9; examples 3,4	1-25, 29, 31, 34-37
Y	KOPRIVOVA ANNA ET AL: "Functional knockout of the adenosine 5'-phosphosulfate reductase gene in Physcomitrella patens revives an old route of sulfate assimilation." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 277, no. 35, 30 August 2002 (2002-08-30), pages 32195-32201, XP002245177 August 30, 2002 ISSN: 0021-9258 abstract	1-25, 29, 31, 34-37

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

25 May 2004

Date of mailing of the international search report

24/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Huber, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/14576

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SCHAEFER D G ET AL: "EFFICIENT GENE TARGETING IN THE MOSS PHYSCOMITRELLA PATENS" PLANT JOURNAL, BLACKWELL SCIENTIFIC PUBLICATIONS, OXFORD, GB, vol. 11, no. 6, June 1997 (1997-06), pages 1195-1206, XP000885764 ISSN: 0960-7412 abstract	1-37
A	--- WO 01/25456 A (GORR GILBERT ;RESKI RALF (DE); GREENOVATION PFLANZENBIOTECHNO (DE)) 12 April 2001 (2001-04-12) cited in the application page 11 -page 26; claims 1-6	1-37
A	--- LEROUGE P ET AL: "N-glycoprotein biosynthesis in plants: recent developments and future trends" PLANT MOLECULAR BIOLOGY, NIJHOFF PUBLISHERS, DORDRECHT, NL, vol. 38, 1998, pages 31-48, XP002140796 ISSN: 0167-4412 abstract page 45, last paragraph -----	1-37

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/14576

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0129242	A	26-04-2001	AU	1573601 A		30-04-2001
			CA	2388432 A1		26-04-2001
			EP	1224309 A2		24-07-2002
			WO	0129242 A2		26-04-2001
WO 0125456	A	12-04-2001	DE	19947290 A1		19-04-2001
			AT	232904 T		15-03-2003
			AU	1129501 A		10-05-2001
			BG	106547 A		30-04-2003
			BR	0014671 A		23-07-2002
			CA	2381995 A1		12-04-2001
			CN	1402791 T		12-03-2003
			CZ	20021061 A3		17-07-2002
			WO	0125456 A2		12-04-2001
			DE	50001299 D1		27-03-2003
			DK	1206561 T3		26-05-2003
			EE	200200159 A		15-04-2003
			EP	1206561 A2		22-05-2002
			ES	2192545 T3		16-10-2003
			HR	20020250 A2		29-02-2004
			HU	0202628 A2		28-12-2002
			JP	2003511035 T		25-03-2003
			NO	20021201 A		08-05-2002
			NZ	517996 A		30-06-2003
			PL	354716 A1		09-02-2004
			PT	1206561 T		30-06-2003
			SI	1206561 T1		31-10-2003
			SK	4152002 A3		09-01-2003
			TR	200200700 T2		21-01-2003
			ZA	200202007 A		28-07-2003